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09/768,414	01/24/2001	Michael Scul	464.1009 CON2	4765

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EXAMINER

DO, PENSEE T

ART UNIT PAPER NUMBER

1641

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/768,414

Applicant(s)

SEUL ET AL.

Examiner

Pensee T. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 5-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8 & 12 or 2003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of group I, claims 1-4, in the reply filed on December 10, 2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Amendment Entry & Claim Status***

The preliminary amendment filed on December 10, 2003 has been acknowledged and entered. Claims 1-4 are examined. Claims 5-14 are withdrawn from further consideration.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 lacks a correlation step. The preamble of claim 1 recites " A process of spatially encoding a planar assembly of particles. However, the body of the claim lacks such step.

Claim 1 is confusing. The claim recites that a group of the particles is placed into the electrolyte solution so as to confine said injected particles to a first segment of the light sensitive electrode, then translocating those confined particle to a second segment

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of the light sensitive electrode, and merging said particles with any pre-existing planar assembly of particles, there is no pre-existing planar assembly of particles in the second segment because this is the first injection of a group of particles. Furthermore, the claim fails to recite injecting another group of particles after that, thus there would never be any addition group of particles, which was to be merged with the first group because there was only one group of particles. Claim 1 is also confusing on the illumination pattern, where does it come from? Is it originally on the light sensitive electrode or some source of light has to illuminate the segment containing the group of particles.

Claim 3 is unclear of the spatial relationship of the programmable illumination pattern generator and the light sensitive electrode. The step of activating the generator is missing.

Claim 4 seems to be an independent claim. However, it still links to claim 3, a method of encoding. It is suggested that claim 4 be rewritten in completely independent form, e.g. incorporating the steps of claim 3. Claim 4 is also confusing in reciting "cross-correlating an image of the planar assembly". Where does this image come from? Is it the same as those have been generated in the method of steps 1-3?

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

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patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,468,811. Although the conflicting claims are not identical, they are not patentably distinct from each other because both are drawn to a method of moving particles suspended at an interface between an electrolyte and electrolyte solution comprising the following steps: providing a first electrode in a first plane, and a second electrode in a second plane, an electrolyte solution located therebetween and a plurality of particles suspended in the electrolyte solution, wherein the second electrode is a light sensitive electrode; generating an electric field at an interface between the electrolyte solution and the second electrode to create fluid flow of the electrolyte solution having a velocity, said velocity having a magnitude determined by said electric field and a direction determined by said spatial modulations in the properties of the second electrode, said properties affecting the local distribution of the electric field at the interface; the spatial modulations of the properties of the second electrode are produced by patterning the surface or the interior of the second electrode by spatially modulated oxide growth, surface chemical patterning or surface profiling; the property of the second electrode being modulated comprises impedance, one or more areas of the surface or the interior of the second electrode being modified to exhibit low impedance, and wherein the electrolyte solution

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moves to the areas of low impedance; the method further comprises a step of illuminating the second electrode with a predetermined light pattern.

The '811 patent differs from the invention because it fails to teach the step of translocating said confined particles to a second segment of the light sensitive electrode delineated by a second illumination pattern on said light sensitive electrode and merging said particles with any pre-existing planar assembly of particles previously formed in said second segment of the light sensitive electrode.

It would have been obvious to one of ordinary skills in the art to translocate the particles to a second segment on the light sensitive electrode and merge said particles with any pre-existing planar assembly of particles previously formed in said second segment because patent '811 teaches that "***the property of the second electrode being modulated comprises impedance, one or more areas of the surface or the interior of the second electrode being modified to exhibit low impedance, and wherein the electrolyte solution moves to the areas of low impedance***" (see claim 7). Since the particles are suspended in the electrolyte solution and "the electrolyte solution moves to the areas of low impedance on the second electrode" (claim 7), it is inherent that the particles can be drawn to one or more areas of the surface or the interior of the second electrode of low impedance and thus it is also inherent that groups of particles can be merged with previously formed particles in a second segment of the light sensitive electrode.

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,387,707.

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Although the conflicting claims are not identical, they are not patentably distinct from each other because both are drawn to a method forming an assembly of cells/particles in a designated area on a light sensitive electrode, comprising a plurality of cells/particles suspended at an interface between said light sensitive electrode and an electrolyte solution; generating an electric field at the interface; and illuminating the interface with a predetermined light pattern to form a planar assembly of substantially one layer of cells/particles in a designated area on the light sensitive electrode, wherein the designated area is defined by the pattern of illumination; the method further comprises an additional electrode which is substantially planar and aligned to the light sensitive electrode and these two electrodes are separated by a gap which contains the plurality of cells/particles; the method further comprises a step of spatially or temporally varying the light pattern to cause the alteration of the assembly, said alteration being selected from the group consisting of disassembly, disassembly followed by assembly, repositioning the assembly, reconfiguration of the assembly, and segmentation of the assembly.

However, patent '707 fails to teach a step of translocating the particles to a second segment of the light sensitive electrode by a second illumination pattern on said light-sensitive electrode; and merging said particles with any pre-existing planar assembly of particles previously formed in said second segment of the light-sensitive electrode.

It would have been obvious to one of ordinary skills in the art to translocate the particles to a second segment of the light sensitive electrode by a second illumination

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pattern since patent '707 teaches that the "alteration of assembly is caused by varying the light pattern" and such alteration includes segmentation of the assembly, disassemble and reassemble or repositioning the assembly (see claim 5). Thus, merging is inherent because segmentation of the assembly would create a merge between the first segment and second segment on the light sensitive electrode.

### ***Remarks***

Claims 1-4 are free of prior arts.

The prior arts fail to teach a process of spatially encoding a planar assembly of particles formed on a substrate by sequential injection of a multiplicity of groups of particles of at least one type, said process comprising providing a substrate comprising a light-sensitive planar electrode, the light sensitive electrode being aligned with another planar electrode in substantially parallel arrangement, with said electrodes being separated by a gap, and the gap containing an electrolyte solution which is in contact with said electrodes; placing a group of at least one type of particles selected from a reservoir containing said at least one type of particles into the electrolyte solution so as to confine the injected particles into a first segment of the light-sensitive electrode delineated by a first illumination pattern on said light-sensitive electrode; translocating said confined particles to a second segment of the light-sensitive electrode delineated by a second illumination pattern on said light sensitive electrode; and merging said particles with any pre-existing planar assembly of particles previously formed in said second segment of the light-sensitive electrode.

### ***Conclusion***



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pensee T. Do  
Patent Examiner  
June 24, 2004



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07/21/04